We claim:

1. A method for rendering a region of a distance field representing an object, wherein the distance field is partitioned into a set of cells, each cell comprising a set of distance samples and a method for reconstructing the distance field within the cell using the distance samples, comprising:

selecting a set of source cells from the set of cells of the distance field to render the region;

representing each source cell in the set of source cells as a geometric element in a world coordinate system, each geometric element associated with a texture map, the texture map comprising distance samples of the corresponding source cell;

transforming each geometric element from the world coordinate system to a pixel coordinate system;

texture mapping, using the distance samples, each geometric element to determine a distance for each component of each pixel associated with the geometric element; and

mapping the distance of each component of each pixel to an antialiased intensity of the component of the pixel to render the region of the distance field representing the object.

2. The method of claim 1 wherein a particular geometric element is described by a quadrilateral.

3. The method of claim 1 wherein a particular geometric element is described by a triangle.

4. The method of claim 1 wherein a particular geometric element is described by a polygon.

5. The method of claim 1 wherein a particular geometric element is described by a set of control vertices.

6. The method of claim 1 wherein the transforming is performed by a central processing unit.

7. The method of claim 1 wherein the transforming is performed by a graphics processing unit.

8. The method of claim 1 wherein the transforming is performed by a vertex shader.

9. The method of claim 1 wherein the texture mapping performs bi-linear interpolation.

10. The method of claim 1 wherein the texture mapping performs tri-linear interpolation and the distance samples are stored in a mipmap.

11. The method of claim 1 wherein the texture mapping performs bi-quadratic interpolation.

12. The method of claim 1 wherein the texture mapping performs high-order interpolation.

13. The method of claim 1 wherein the texture mapping approximates the distance of each component of each pixel.

14. The method of claim 1 wherein the texture mapping determines the distance of each component of each pixel exactly.

15. The method of claim 1 wherein the texture mapping determines the distance of each component of each pixel concurrently.

16. The method of claim 1 wherein the texture mapping determines the distance of each component of each pixel independently.

17. The method of claim 1 wherein the texture mapping uses a pixel shader.

18. The method of claim 1 wherein the mapping the distance uses one-dimensional texture mapping.

19. The method of claim 1 wherein the mapping the distance uses a lookup table.

20. The method of claim 1 wherein the mapping the distance uses a pixel shader.

21. A method for rendering a region of a set of distance fields representing a corresponding set of objects, wherein each distance field in the set of distance fields is partitioned into a set of cells, each cell comprising a set of distance

samples and a method for reconstructing the corresponding distance field within the cell using the distance samples, comprising:

selecting, for each distance field in the set of distance fields, a set of source cells from the set of cells of the distance field to render the region;

representing, for each distance field in the set of distance fields, each source cell in the corresponding set of source cells as a geometric element in a world coordinate system, each geometric element associated with a texture map, the texture map comprising distance samples of the corresponding source cell;

transforming each geometric element from the world coordinate system to a pixel coordinate system;

texture mapping, using the distance samples, each geometric element to determine a distance for each component of each pixel associated with the geometric element;

combining the distances for each component of each pixel to determine a combined distance; and

mapping the combined distance of each component of each pixel to an antialiased intensity of the component of the pixel to render the region of the set of distance fields representing the corresponding set of objects.

22. The method of claim 21 wherein the combining performs a maximum of the distances to determine the combined distance.

23. The method of claim 21 wherein the combining performs an arithmetic average of the distances to determine the combined distance.

24. The method of claim 21 wherein the combining performs a union of the distances to determine the combined distance.

25. The method of claim 21 wherein the combining performs an intersection of the distances to determine the combined distance.

26. The method of claim 21 wherein the combining performs a difference of the distances to determine the combined distance.

27. The method of claim 21 wherein the combining performs an implicit blend of the distances to determine the combined distance.

28. The method of claim 21 wherein the combining performs an arithmetic operation on the distances to determine the combined distance.

29. The method of claim 21 wherein the combining performs a conditional operation on the distances to determine the combined distance.

30. The method of claim 21 wherein the combining uses a procedure to determine the combined distance.

31. The method of claim 21 wherein the combining uses a table to determine the combined distance.

32. The method of claim 21 wherein the combining uses a pixel shader.

33. An apparatus for rendering a region of a set of distance fields representing a corresponding set of objects, wherein each distance field in the set of distance fields is partitioned into a set of cells, each cell comprising a set of distance

samples and a method for reconstructing the corresponding distance field within the cell using the distance samples, comprising:

means for selecting, for each distance field in the set of distance fields, a set of source cells from the set of cells of the distance field to render the region;

means for representing, for each distance field in the set of distance fields, each source cell in the corresponding set of source cells as a geometric element in a world coordinate system, each geometric element associated with a texture map, the texture map comprising distance samples of the corresponding source cell;

means for transforming, using a first graphics hardware component, each geometric element from the world coordinate system to a pixel coordinate system;

means for texture mapping, using a second graphics hardware component and the distance samples, each geometric element to determine a distance for each component of each pixel associated with the geometric element;

means for combining, using a third graphics hardware component, the distances for each component of each pixel to determine a combined distance; and

means for mapping, using a fourth graphics hardware component, the combined distance of each component of each pixel to an antialiased intensity of the component of the pixel to render the region of the set of distance fields representing the corresponding set of objects.

34. The apparatus of claim 33 wherein the first graphics hardware component is a central processing unit.

35. The apparatus of claim 33 wherein the first graphics hardware component is a graphics processing unit.

36. The apparatus of claim 33 wherein the first graphics hardware component is a graphics processing unit using a vertex shader.

37. The apparatus of claim 33 wherein the second graphics hardware component is a texturing unit.

38. The apparatus of claim 33 wherein the second graphics hardware component comprises multiple texturing units.

39. The apparatus of claim 33 wherein the second graphics hardware component is a texturing unit using a pixel shader.

40. The apparatus of claim 33 wherein the third graphics hardware component is a texturing unit.

41. The apparatus of claim 33 wherein the third graphics hardware component is a texturing unit using a pixel shader.

42. The apparatus of claim 33 wherein the third graphics hardware component is a frame buffer.

43. The apparatus of claim 33 wherein the third graphics hardware component is an auxiliary buffer.

44. The apparatus of claim 33 wherein the fourth graphics hardware component is a texturing unit.

45. The apparatus of claim 33 wherein the fourth graphics hardware component is a texturing unit using a pixel shader.